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August 8, 2003

U S Nuclear Regulatory Commission
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POINT BEACH NUCLEAR PLANT UNITS 1 AND 2
DOCKET NOS. 50-266 AND 50-301
LICENSE NOS. DPR-24 AND DPR-27

NUCLEAR REGULATORY COMMISSION BULLETIN 2003-01: POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER REACTORS – 60-DAY RESPONSE

On June 9, 2003, the Nuclear Regulatory Commission (NRC) transmitted Bulletin (BL) 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors." The NRC required that specific information be provided within 60 days of the date of the bulletin. In accordance with this requirement, Nuclear Management Company, LLC (NMC) is providing the 60-day response for the Point Beach Nuclear Plant.

This letter contains four new commitments and no revisions to existing commitments.

1. NMC will develop and implement training on sump clogging by August 15, 2003.

2. NMC will submit an implementation schedule for revising plant emergency operating procedures, where appropriate, to stop or throttle redundant pumps that are not necessary to provide required flows to cool containment and the reactor core within 30 days of the issuance of the generic guidance by Westinghouse Owners Group, currently expected by March 31, 2004.

3. NMC will implement additional measures that provide for more aggressive containment foreign material control by January 14, 2004.

4. NMC will perform an evaluation to analyze the emergency core cooling system and containment spray system recirculation functions with respect to the potentially adverse post-accident debris blockage effects on the containment sump, taking into account the recent research findings, to verify compliance with applicable regulatory requirements. NMC will continue to work with the Nuclear

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Energy Institute (NEI) to follow Generic Safety Issue 191 resolution methodology, currently being developed by NEI. NMC will implement the methodology, as appropriate for Point Beach.

The interim compensatory measure, as described in the above commitment 1 and 3, will remain in place until commitment 4 is complete.

I declare under penalty of perjury that the foregoing is true and accurate. Executed on August 8, 2003.

A. J. Cayia
Site Vice President, Point Beach Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region III
Project Manager, Point Beach Nuclear Plant, USNRC, NRR
NRC Resident Inspector – Point Beach Nuclear Plant
PSCW

ATTACHMENT

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT
DOCKET 50-266 and 50-301

August 8, 2003

NRC BULLETIN 2003-01: POTENTIAL IMPACT OF DEBRIS ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER REACTORS POINT BEACH NUCLEAR PLANT 60-DAY RESPONSE

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POINT BEACH NUCLEAR PLANT 60-DAY RESPONSE

Requested Information

All addressees are requested to provide a response within 60 days of the date of this bulletin that contains the information requested in Option 1 or Option 2.

Option 1: State that the ECCS and CSS recirculation functions have been analyzed with respect to the potentially adverse post-accident debris blockage effects identified in this bulletin, taking into account the recent research findings described in the Discussion section, and are in compliance with all existing applicable regulatory requirements.

Option 2: Describe any interim compensatory measures that have been implemented or will be implemented to reduce the risk which may be associated with potentially degraded or nonconforming ECCS and CSS recirculation functions until an evaluation to determine compliance is complete. If any of the interim compensatory measures listed in the Discussion section will not be implemented, provide justification. Additionally, for any planned interim measures that will not be in place prior to your response to this bulletin, submit an implementation schedule and provide the basis for concluding that their implementation is not practical until a later date.

Response

Nuclear Management Company, LLC (NMC) is providing a response in accordance with Option 2 of Nuclear Regulatory Commission (NRC) Bulletin (BL) 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors," for the Point Beach Nuclear Plant. NMC chose Option 2 for Point Beach, as the detailed analyses necessary to address Option 1 have not been performed at this time.

Interim compensatory measures that have been or that will be implemented to reduce risk which may be associated with potentially degraded or nonconforming emergency core cooling system (ECCS) and containment spray system (CSS) recirculation functions until an evaluation to determine compliance is complete are listed below.

- ***Operator training on indications of responses to sump clogging***

  Interim compensatory measures that have been implemented

  The Licensed Operator Requalification program (LOR) currently includes an annual review of Sump Recirculation and Loss of Sump Recirculation procedures, as well as annual reviews of Shutdown Emergency Procedures.

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A revision made to the emergency operating procedure (EOP) for loss of reactor or secondary coolant included the indications to be monitored for containment sump performance and the required actions to be taken if sump blockage develops.

Indications that are monitored include:

- Containment Sump Level
- Residual Heat Removal (RHR) Pump Operation-NORMAL
- Safety Injection (SI) Pump Operation-NORMAL
- Low Head Injection Flow-STABLE
- High Head Injection Flow-STABLE

Actions in response to indicated sump blockage are to adjust flow as necessary to maintain stable sump conditions.

If the sump becomes clogged during switchover to sump recirculation, plant procedures are invoked to provide guidance for a loss of sump recirculation.

Operations Training developed an operations (OPS) Notebook entry that describes the major concerns of NRC Bulletin 2003-01 and discusses the use of our Emergency Operating Procedure (EOP) network to mitigate sump blockage during a Loss of Coolant Accident (LOCA). This OPS Notebook entry has been implemented.

The information in the OPS Notebook entry was incorporated into the next LOR Cycle. The current LOR cycle includes three training sessions that refer to this issue:

A Lesson Plan was developed to address the revision to the EOP discussed above and summarize the sump blockage concerns identified in Bulletin 2003-01. It also briefly discusses the recent operating experience noted in the Bulletin at Davis-Besse and the Los Alamos Report.

A Lesson Plan also refers to the situation of sump plugging as one in which a re-diagnosis transition might be appropriate. It describes the filtering effect of suspended debris and a possible procedural flowpath involving EOPs that might be encountered.

An existing Simulator Guide contains a scenario that requires operators to respond to a loss of containment sump recirculation event. During post-scenario discussion, the instructor describes the potential sump screen blockage phenomenon as one method of entering the 'Loss of Sump Recirculation' procedure. The instructor also ensures that students are aware of the information in the Operations Notebook entry on the subject.

Knowledge of the concerns for sump blockage, along with understanding the

indications of sump blockage, and operator actions in response to the indications provided in EOPs, provide effective operator mitigation for potential blockage events.

Interim compensatory measures that will be implemented

NMC has reviewed existing operator training programs and determined a need to further enhance operator training relative to indications of and responses to sump clogging. Additional sump clogging training as described above will be administered to appropriate personnel.

Implementation Schedule: The sump clogging training described above will be implemented by August 15, 2003. This will complete our interim compensatory action operator training. The basis for delaying implementation beyond the 60-day response date is to allow sufficient time to complete training during the current licensed operator requalification cycle.

- ***Procedural modifications, if appropriate, that would delay the switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary to provide required flows to cool the containment and reactor core, and operating the CSS intermittently)***

Interim compensatory measures that have been implemented

The existing EOP network at Point Beach already minimizes the number of operating pumps during preparations to switch to sump recirculation. This was completed several years ago to prolong refueling water storage tank (RWST) inventory for containment spray and to ensure sufficient time available to perform all manual valve repositioning necessary to support containment sump recirculation. Therefore, no new procedural changes are required to address this issue.

There are two procedure flow paths that may apply for large break LOCA. Both direct the operator to align for sump recirculation. The procedures direct reducing the ECCS trains to one train of injection. The EOP requires reducing containment spray to one train if spray were actuated. This arrangement of the EOPs was to aid in RWST conservation while aligning for sump recirculation. This will also reduce the rate of transport of debris to the sump and maximize the amount of debris that settles out of suspension before reaching the sump screens.

A change was made in the procedure for evaluating long term plant status, to monitor containment sump performance following a large break LOCA. This step directs operators and technical support center (TSC) staff to monitor containment sump level, RHR pump operation, SI pump operation, low head injection flow, and high head injection flow. If indication of sump blockage is observed, the 'response not obtained' (RNO) provides direction to adjust injection flow as necessary to

maintain stable pump conditions.

Interim compensatory measures that will be implemented

Implementation Schedule: NMC will submit an implementation schedule for revising plant emergency operating procedures, where appropriate, to stop or throttle redundant pumps that are not necessary to provide required flows to cool containment and the reactor core within 30 days of the issuance of the generic guidance by Westinghouse Owners Group, currently expected by March 31, 2004.

- ***Ensuring that alternative water sources are available to refill the RWST or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere***

Interim compensatory measures that have been implemented

The procedure for loss of containment sump recirculation provides the guidance to inject water into the core from the RWST in the event sump recirculation is lost or cannot be aligned. This is a continuous action step monitored in two EOPs. The procedure provides guidance to reduce RWST drawdown, makeup to the RWST from alternate sources, and depressurize the reactor coolant system (RCS) to minimize break flow. Guidance to make up to the RWST is also provided. This guidance directs using makeup sources from the chemical volume control system (CVCS) spent fuel pool (SFP) transfer canal using the CVCS holdup tank recirculation pump and/or the opposite unit RWST.

Consideration was given to raising minimum RWST level to provide more inventory; however, Technical Specifications already require a minimum 95% level (275,000 gallons).

- ***More aggressive containment cleaning and increased foreign material controls***

Interim compensatory measures that have been implemented

NMC has reviewed existing procedure requirements for containment closeout and foreign material controls. This review indicated that procedure requirements currently exist both for post-outage and on-line inspections to ensure that the materiel condition in containment minimizes the potential for containment sump blockage. The post outage containment closeout inspection procedure is performed following each outage. One purpose of this procedure is to ensure that no materials are left in the reactor containment that, in the unlikely event of an accident requiring containment sump recirculation, could block the suction path of the low head safety

injection pumps. The procedure also requires that equipment left in containment is adequately secured to prevent interaction with safety related systems and components during a seismic event. The containment inspection procedure performed quarterly locally observes accessible areas for undesirable articles or conditions that could jeopardize the ability of the sump recirculation phase during accident conditions.

A review of plant procedures indicated that potential enhancements might be necessary to establish a program for containment inventory control of fibrous materials. This program would limit the amount of fibrous material allowed in containment to minimize the potential for foreign material.

Implementation Schedule: NMC will implement additional measures that provide for more aggressive containment foreign material control by January 14, 2004. The basis for delaying implementation beyond the 60-day response date is to allow for proper planning and appropriate plant conditions to perform these activities consistent with as low as reasonably achievable (ALARA) requirements.

- ***Ensuring containment drainage paths are unblocked***

Interim compensatory measures that have been implemented

The configuration of the Point Beach containment is conducive to directing flow to the containment sump. The entire floor at the 8-foot elevation of the containment building serves as the emergency core cooling system (ECCS) sump for collection of water introduced to the containment following a LOCA. The 8-foot floor elevation is essentially an open area except for the primary reactor shield wall, and the walls and supports for the loop compartments. The floor under the loop compartments is raised two feet above the 8-foot elevation, but is situated to allow flow down to the containment floor.

The loop compartments house the steam generators (SG) and reactor coolant pumps and are open at the top. A wall separating the reactor coolant pump (RCP) and the SG subcompartments extends up from the 46-foot elevation. Surrounding walls extend up from the 21-foot elevation. The large open areas between the high-pressure coolant piping and components within the loop compartments and the 8-foot floor elevation were designed to minimize asymmetric pressure forces on the walls during a design basis LOCA, and also facilitate blockage-resistant drainage paths to the sump.

The main upper floors inside the containment building are at the 66, 46, and 21-foot elevations. In addition to floor drains, there are numerous paths for free drainage of water from the upper floors of the containment to the 8-foot elevation. A 3-inch annular gap exists between the edge of the upper floors and the containment liner

creating a sizable flowpath to ECCS sump floor. Water from the containment spray system that sprays into the loop and pressurizer compartments falls directly to the compartment floors and ultimately spills to the 8-foot elevation. Water can also flow through two stairwells to the 8-foot elevation. Water sprayed into the hatch above the reactor vessel head lay-down area falls through an opening in the 46-foot floor to the 21-foot elevation. From there it spills over the edge of the floor down to the 8-foot elevation.

Water that is sprayed into the refueling cavity will flow through the refueling cavity drain line and ultimately reach the sump floor. The refueling cavity drain line has been modified by removing a flapper valve and installing an inlet debris strainer. This inlet strainer was designed with redundant flow area to allow significant blockage without reduction in drainage capability. The debris sources have been further limited in the refueling cavity by the implementation of recent modifications to change the reactor head insulation from calcium silicate blocks to reflective metallic insulation. This work was performed on Unit 2 during the May 2002 refueling outage. The new insulation was installed on Unit 1 during the refueling outage in September 2002. The remainder of the reactor vessel is insulated with reflective metallic insulation that is not conducive to blockage of the refueling cavity drain path strainer. Debris that may be generated by a secondary side high-energy line break above the refueling cavity (such as a main steam line break or SG shell rupture) is not a concern since a secondary side break does not require transitioning to the sump recirculation phase.

A post outage containment closeout inspection is performed per procedure following each outage. One purpose of this procedure is to ensure that no materials are left in the reactor containment that, in the unlikely event of an accident requiring containment sump recirculation, could block the suction path of the low head safety injection pumps.

A containment inspection checklist is performed quarterly per procedure to locally observe accessible areas for undesirable articles or conditions that could jeopardize the ability of the sump recirculation phase during accident conditions.

- ***Ensuring sump screens are free of adverse gaps and breaches***

Interim compensatory measures that have been implemented

The accident sump screens are removed and inspected for structural integrity and abnormal corrosion every refueling outage as part of the performance of inservice test procedures "Leakage Reduction and Preventative Maintenance Program Test of Containment Sump B Suction Line". As part of this procedure, the screens are inspected for "structural distress, cracking, corrosion, etc." While not specifically defined, the screens are observed for adverse alignment including gaps and

breaches. This is performed in accordance with a site Technical Specification Surveillance Requirement.

In addition, the sump screen is inspected as part of the post-outage containment inspection procedure. The checklist specifically requires to "Observe that suction inlet to the containment sump B is not restricted by debris AND that the debris strainers show no evidence of structural distress or abnormal corrosion."

NMC has addressed above, the six compensatory measures as discussed in the Bulletin. Therefore, there are no compensatory measures, as listed in the Discussion section of the Bulletin, that have not been addressed.

In addition, NMC is committing to perform an evaluation to analyze the emergency core cooling system and containment spray system recirculation functions with respect to the potentially adverse post-accident debris blockage effects on the containment sump, taking into account the recent research findings, to verify compliance with applicable regulatory requirements. NMC will continue to work with the Nuclear Energy Institute (NEI) to follow Generic Safety Issue 191 resolution methodology, currently being developed by NEI. NMC will implement the methodology, as appropriate for Point Beach Nuclear Plant. The commitments made in relation to the compensatory measures will remain in effect until an evaluation to verify compliance is complete.